

REMARKS

This amendment is submitted in response to the outstanding final Office Action, dated April 21, 2004. The present application was filed on December 28, 2001 with claims 1-21. Claims 11-21 have
5 been canceled, without prejudice. Claims 1-10 are therefore presently pending in the above-identified patent application.

In the Office Action, the Examiner finally rejected claims 1-10 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention, due to an alleged indefinite use of the term
10 “substantial,” and also for use of “said first insulating layer” without providing an antecedent basis for the term.

In addition, the Examiner finally rejected claims 1-3, 5, 6 and 8-10 under 35 U.S.C. §102(e) as being allegedly unpatentable over U.S. Patent No. 6,329,234 issued to Ma et al. (hereinafter “Ma”). The Examiner also finally rejected claim 4 under 35 U.S.C. §103(a) as being unpatentable over Ma.

15 The present invention has been described in Applicant’s prior response, incorporated by reference herein.

FORMAL REJECTIONS

As mentioned above, the Examiner has finally rejected claims 1-10 as being indefinite as under
20 35 U.S.C. §112, second paragraph, alleging that the terms “substantial magnetic permeability” and “substantial dielectric permitivity,” appearing in claims 1, 4, 8 and 10, render the claims indefinite. The Examiner alleges that there is some inconsistency between different sections of the specification that makes it difficult to “ascertain what the intended measure of degree of ‘substantial dielectric permeability’ could be.” See, final Office Action, beginning at page 4, paragraph 10.

25 Applicant respectfully submits that there may exist some confusion on the part of the Examiner as to the terms “substantial magnetic permeability” and “substantial dielectric permitivity,” both of which are clearly supported in the specification.

Applicant, as in the previous response, points out that when a term of degree is presented in a claim, a determination is to be made as to whether the specification provides some standard for
30 measuring that degree. See M.P.E.P. §2173.05(b). Such guidelines are clearly present in the present specification. For example,

Substantial magnetic permeability

On page 14 of the specification it is indicated that materials having a relative permeability of at least about 2, e.g., more than about 10, are considered high permeability materials. These high permeability materials include, for example, ferrites. Thus, the specification clearly sets forth a standard for determining degrees of magnetic permeability

Substantial dielectric permittivity

On page 15 of the specification it is indicated that materials having a relative dielectric constant of at least about 7, e.g., more than about 15 or 20, are considered high permittivity materials. These high permittivity materials include, for example, BaSrTiO₃. Thus, the specification clearly sets forth a standard for determining degrees of dielectric permittivity.

The Examiner's remarks seem to confuse the standards for magnetic permeability and dielectric permittivity. For example, in the final Office Action, beginning at page 4, paragraph 10, the Examiner stated in regard to Applicant's prior response that,

The material on page 14 [of the specification] relied upon for support states, "... illustrative high permeability materials in accordance with the practicing [of] the present invention include any suitable material having a relative permeability of at least about 2, and advantageously more than about 10". The specification further states on page 15, that the dielectric constant can be "... at least about 7, and advantageously more than about 15 or 20. . .", and goes on to say that this is [a] comparison to low k insulators, such as silicon dioxide and silicon nitride.

This paraphrasing of Applicant's prior response is not correct. As was indicated above, high permeability materials are materials having a relative permeability of at least about 2, e.g., more than about 10. High permittivity materials are materials having a relative dielectric constant of at least about 7, e.g., more than about 15 or 20. The Examiner's argument presented above seems to incorrectly mix these two different material standards.

For example, the Examiner further stated that,

Silicon dioxide and silicon nitride have a dielectric constant in the range of 4 to 7, as admitted by Applicant. According to page 14 [of the specification], a dielectric constant of at least 2 is suitable and considered to be a high permeability material, which would include typical interlayer insulators, such as SiO and SiN. However, the following page [of the

specification] prohibits the use of these materials. Additionally, the possible range of the dielectric permeability on page 14 [of the specification] seems to be anywhere from 2 to above 10, while on page 15, the range must be from 7 to somewhere higher than 15 or higher than 20. *Id.*

Several of the above assertions made by the Examiner are in error. For example, the specification does not set forth that “a dielectric constant of at least 2 is . . . considered to be a high permeability material” What the specification, at page 14, in fact discloses is that an illustrative high permeability material includes any suitable materials having a relative permeability of at least about 2, and advantageously more than about 10.

Further, the Examiner’s use of the term “dielectric permeability,” evidences a confusion between 1) magnetic permeability and 2) dielectric permittivity. This further appears to be the case when the Examiner, as highlighted above, stated that “dielectric permeability on page 14 [of the specification] seems to be anywhere from 2 to above 10, while on page 15, the range must be from 7 to somewhere higher than 15 or higher than 20,” when in fact, the specification clearly sets forth that materials having a relative permeability of at least about 2, e.g., more than about 10, are considered high permeability materials and materials having a relative dielectric constant of at least about 7, e.g., more than about 15 or 20, are considered high permittivity materials.

Therefore, Applicant respectfully submits that one of ordinary skill in the art, given the present teachings would in fact be able to “ascertain what the intended measure of degree of” magnetic permeability and dielectric permittivity is.

The Examiner further finally rejected claim 2 under 35 U.S.C. §112, second paragraph, for reciting the limitation “said first insulating layer” without providing antecedent basis for the term. Applicant does not understand this antecedent basis rejection given the fact that in Applicant’s prior response, claim 2 was amended to recite “an upper surface of a first insulating layer.” Applicant respectfully submits that such an amendment cured any antecedent basis defects in the claim. Thus, Applicant respectfully requests reconsideration and withdrawal of the rejection of claim 2.

PRIOR ART REJECTIONS

As previously indicated, the Examiner finally rejected claims 1-3, 5, 6 and 8-10 under 35 U.S.C. §102(e) over Ma. In Applicant’s prior response it was argued that Ma does not teach or suggest an enhancement layer having either substantial magnetic permeability or substantial dielectric permittivity

or both substantial magnetic permeability and substantial dielectric permittivity, a limitation present in each of independent claims 1, 8 and 10. This position is maintained herein.

In the present final Office Action, page 5, paragraph 11, the Examiner asserted that,

5 The silicon nitride layer enhancement layer taught by Ma et al. would have had a dielectric constant in the range of 4 to about 7. According to Applicant's disclosure, a dielectric material having relative permeability in this range is suitable for carrying out the invention. Specifically, page 14 of Applicant's disclosure states that a suitable material with a relative permeability of at least 2 can be used.

10 Applicant respectfully disagrees with the Examiner's assertions and confusing logic. The Examiner seems to be trying to correlate dielectric constant values, e.g., for silicon nitride, with relative permeability values and combining the two standards to arrive at the teachings of the present invention. Namely, what the Examiner seems to be arguing is that since Ma discloses silicon nitride which
15 arguably has a dielectric constant value in the range of 4 to about 7, and Applicant discloses use of high magnetic permeability materials having a relative permeability of at least about 2, e.g., more than about 10, that Ma discloses high permeability materials.

 This reasoning confuses the basic standards presented in the specification for high magnetic permeability, based on the relative permeability of a material, and high dielectric permittivity, based on
20 the relative dielectric constant of a material, namely that, high permeability materials have a relative permeability of at least about 2, e.g., more than about 20 and high permittivity materials have a relative dielectric constant of at least about 7, e.g., more than about 15 or 20. Clearly, Ma does not teach or suggest use of either high magnetic permeability materials and/or high dielectric permittivity materials.

 Thus, Applicant respectfully maintains that Ma simply does not teach or suggest an enhancement
25 layer having either substantial magnetic permeability or substantial dielectric permittivity or both substantial magnetic permeability and substantial dielectric permittivity. Therefore, independent claims 1, 8 and 10, as well as all claims dependent thereon, are neither anticipated nor obvious over Ma.

 As mentioned above, the Examiner has also finally rejected claim 4 under 35 U.S.C. §103(a) over Ma. Namely, the Examiner in the final Office Action, page 6, paragraph 12, stated that,

30 With respect to including a second enhancement layer, though not explicitly stated in Ma et al., one having ordinary skill in the art would understand that copper is subject to oxidation and can be easily damaged if left exposed. The passivation layer is required to protect the device from premature failure. Materials such as silicon nitride are common

passivation/enhancement layer materials. As discussed above, such a layer would have substantial dielectric permittivity.

Again, Applicant respectfully disagrees with the Examiner's characterization of the present teachings. Applicant maintains that, regardless of whether or not it is apparent to have a protective structure, it would not be obvious to one of ordinary skill in the art to employ a second enhancement layer having substantial magnetic permeability and/or substantial dielectric permittivity, as is recited in claim 4. The contention by the Examiner that "[m]aterials such as silicon nitride are common passivation/enhancement layer materials. . . [that] would have substantial dielectric permittivity" is in error. As discussed above, silicon nitride has a dielectric constant in the range of less than about 4 to about 7, which is different from the disclosed dielectric constant values of suitable high permittivity materials. The Examiner's statement even admits that ordinary skill in the art, given the teachings of Ma, would dictate that a low dielectric constant insulator, such as silicon nitride, be employed, not a high permittivity or a high permeability material. Ma simply does not teach or suggest using materials having either substantial magnetic permeability and/or substantial dielectric permittivity.

In view of the foregoing, the invention, as claimed in claims 1-10, cannot be said to be either taught or suggested by Ma. Accordingly, Applicant respectfully requests that the rejection of claims 1-3, 5, 6 and 8-10 under 35 U.S.C. §102(e) and the rejection of claim 4 under 35 U.S.C. §103(a) be withdrawn.

All of the pending claims, i.e., claims 1-10, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,


Michael J. Chang
Attorney for Applicant(s)
Reg. No. 46,611
Ryan, Mason & Lewis, LLP
1300 Post Road, Suite 205
Fairfield, CT 06824
(203) 255-6560

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